

Pesticide Certification Information

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INSECT PESTS
OF
VEGETABLE CROPS

WEST VIRGINIA UNIVERSITY
EXTENSION SERVICE
AN EQUAL OPPORTUNITY/
AFFIRMATIVE ACTION INSTITUTION

INSECT PESTS OF VEGETABLE CROPS

PESTS OF ASPARAGUS

ASPARAGUS BEETLE

Two species of small beetles damage asparagus spears. They both cause similar damage, their life cycles are similar, and control measures are the same for both species. The adult asparagus beetle is about 1/4 inch in length and is bluish-black with yellowish-red patches on its back. The spotted asparagus beetle is yellowish-orange with 12 black spots. One or both species may be present in a given patch.

The beetles start appearing when the first spears are ready to harvest. The black, elongate eggs are glued on end to the spears. This, combined with feeding by the adults and their small, slug-like larvae, ruin the spears for sale. At least two generations are present each year; the adult beetles of the summer generation often feed on the brush, causing severe defoliation and browning.

PESTS OF BEANS

BEAN APHID

These small (1/16 inch), black, soft-bodied, sucking insects feed in colonies near the plant tips and on the flower buds of lima beans. Their feeding results in distorted plants, and many of the blossoms fail to develop pods. Aphids can be present from early summer to fall because many generations are produced each year.

Snap beans are seldom damaged by aphids.

MEXICAN BEAN BEETLE

These small (1/4 inch), terrapin-shaped, bronze beetles with black spots attack all types of beans, but are mainly a problem on snap beans. The eggs are bright yellow, and are deposited on end in clusters on the undersides of the leaves. The larvae are yellow and are covered with branched spines.

Most damage is done by the larvae eating away the undersurface of leaves, causing skeletonized foliage. They will also eat holes into the green pods. They overwinter as adult beetles. At least two generations are produced each year.

SEED CORN MAGGOT

Small, dirty-white maggots feed on the seed, roots, and stems of young seedlings. Bean plants may poke through the soil as “snake heads” but fail to continue normal growth.

Dark-gray adult flies are active after a few warm days in the spring. The flies are similar in appearance to—but smaller than—horse flies. There are three or four generations per year.

Seed corn maggots are most serious in cool, wet soils high in organic matter. Any cultural practice that can hasten germination and plant emergence are the best methods to prevent seed maggot damage. Avoid deep planting in cold soils. A commercial seed treatment will help prevent damage to the beans. Proper use and dosage is explained on label directions.

EUROPEAN CORN BORER

This is probably the most destructive insect pest of snap beans being grown for processing. Larvae of the second generation corn borer start hatching in early August and enter the pods. This can cause a high percentage of beans to be rejected by the processor. (See “Pests of Corn” for description and sketch of this pest.)

PESTS OF COLE CROPS

ROOT MAGGOT

Small (1/8 inch), dirty-white maggots feed on the stem portion of the plants below ground level. This feeding often causes complete girdling of the stem. Affected plants suddenly wilt and often die. When soil moisture is adequate, auxiliary roots may develop above the injured area, permitting the plant to survive.

The dark-gray adult flies are active in April. There are three or four generations per year.

Although plant mortality and injury caused by this pest varies from one year to the next, the root maggot is constantly one of the most troublesome insect pests in both the plant bed and in the field. Many of the insecticides and methods of application used for a number of years are either ineffective or no longer registered for this use. The choice of approved insecticides and methods for application are extremely limited.

CABBAGE WORM

Light-green, soft, velvety worms as long as one inch eat irregular holes in leaves. Large numbers of worms may completely riddle the leaves. Their dark droppings lodge in the axils of leaves, increasing the unattractiveness of the product.

The winter is passed in the pupal stage, and the white adult butterflies can be seen in the field from May until fall. There are at least two generations per year.

CABBAGE LOOPER

The larvae, or loopers, are light-green with pale white stripes. They can easily be distinguished from cabbage worms by their looping movement.

Their life cycle is similar to that of the cabbage worm, except the adults are brown moths. Feeding damage of the two species is essentially the same. The imported cabbage worms get an early start and can cause moderately severe injury by mid-season. The looper problem is most severe in early fall. Fortunately, the imported cabbage worm is more easily controlled than the cabbage looper.

PESTS OF CARROTS

LEAFHOPPER

Several species of leafhopper attack carrots. The six-spotted leafhopper is the principal carrier of aster yellows, a virus disease of carrots. Leafhopper control is essential for this area if quality carrots are expected.

Leafhoppers are very small (less than 1/8 inch) and pale green. The adults fly readily when disturbed; the nymphs commonly move sideways when they walk on the leaves. Most damage is done from June to August.

Typical symptoms of leafhopper damage are stunted, yellow tops. The roots are often covered with fine, fibrous root hairs.

PESTS OF CUCUMBER, MELON, AND SQUASH

STRIPED CUCUMBER BEETLE

During years when striped cucumber beetle populations are high and the incidence of bacterial (cucurbit) wilt is also high, the potential trouble for the next season can be serious. Bacteria overwinter in the gut of the beetle; when beetles feed on new plants the following summer, they transmit the disease. It is practically impossible to grow cucumbers and cantaloupes without some kind of protection from the beetles. Summer squash and watermelons exhibit some tolerance to bacterial wilt.

Striped cucumber beetles are small (1/5 inch), yellowish-green, and have longitudinal black

stripes. They overwinter as adult beetles and appear in the fields when young seedlings emerge or soon after potted plants are placed in the field. The beetles can riddle small plants and actually kill them if enough beetles are present. The greatest loss, however, is from the wilt disease, which may not affect the plant until weeks after the initial infection has taken place.

PESTS OF EGGPLANT

FLEA BEETLE

These little black beetles eat tiny round holes in the leaves. Flea beetles are present from the time plants are put into the field until late summer. The greatest damage from flea beetles is usually to transplants shortly after they are placed in the field. Depending on the flea beetle population, transplants may need protection until they become established. A second generation feeds on the leaves in late July and August. Vigorous-growing plants can usually outgrow this feeding without additional spray protection.

COLORADO POTATO BEETLE

This insect is steadily increasing in importance as a pest of eggplant. Most damage is done by the soft, humpbacked, dark-red larvae. They eat the leaves, causing partial to complete defoliation. Although they are primarily pests of potatoes, they will attack eggplant, pepper, and tomatoes.

Overwintering adult beetles are 3/8 inch long, stout, and convex. They are black with narrow pale-yellow stripes along the back. (See "Pests of Potatoes" for a sketch of this insect.)

PESTS OF PEAS

PEA APHID

This large (3/16 inch), green aphid is a sucking insect, and when abundant, will cause a reduction in yield.

A few aphids can be found in every pea field in the state—but not every field has an aphid problem. This means that in most fields the aphid population is well below the economic damage level. This aphid is quite susceptible to a fungus disease which normally keeps the population in check. Some processors may require a low number of aphids on plants, but a typical field of peas can tolerate as many as 40 aphids per sweep on an insect net before control measures are warranted.

PESTS OF PEPPER

EUROPEAN CORN BORER

This is the most destructive insect pest of peppers in the state. The damage is done during August and September by second-generation larvae that enter the fruits. In light infestations, the borer usually enters the fruits on the stem end, but in moderate to heavy infestations, entry holes chewed into the sides of fruits are very common. Pepper growers have experienced enough damage over the past few years from corn borers that a preventive control program is suggested.

Corn borer larvae eating inside the fruits of pepper are pinkish-white worms up to 3/4 inch in length. Their bodies are covered with many dark-brown spots. Corn borer larvae are active when exposed to sunlight.

GREEN PEACH APHID

This small (1/16 inch), soft, yellowish-green aphid is a sucking insect that feeds in small colonies on the undersides of leaves and on growing tips. It feeds on a variety of vegetable crops, and can be considered one of the major insect pests that the vegetable grower has to fight.

When large numbers of this aphid are present, the plants have a shiny appearance from the honeydew secreted by the aphids. Plants carrying a large population of aphids will be stunted, and production will decrease.

PESTS OF POTATOES

COLORADO POTATO BEETLE

This is the same insect pest that our grandparents called the potato bug. After approximately 25 years of low populations and minor damage, it is now increasing in numbers. Most of the damage is done by the soft, humpbacked, dark-red larvae. Partial to complete defoliation occurs as they eat the leaves.

The winter is passed in the soil as adult beetles. The stout, convex beetles are about 3/8 inch long with a pale-yellow body and 10 black, narrow stripes running lengthwise on the back. They emerge in May and soon deposit bright yellow-orange clusters of eggs on the undersides of the leaves. Most damage is done by larvae of the first generation which are present from May well into July.

FLEA BEETLE

These tiny, hard-shelled, black beetles eat small round holes in the leaves. They jump when disturbed. Overwintering is as adult beetles in the soil; they emerge soon after potato plants come through the soil. There are two generations per year with population peaks in May and early June, and again in mid-July. Spraying systemic soil insecticides at planting time usually keeps flea beetles in check and also controls the Colorado potato beetle.

GARDEN CENTIPEDE (SYMPHYLAN)

The description of this pest can be found with insects that attack corn.

PEACH APHID

Very small (1/16 inch), yellowish-green aphids move into potato fields in early July. They can usually be found in small colonies on the undersides of lower leaves. As populations increase, the middle and upper leaves become infested. When infestations are severe, the plants have a shiny appearance from the honeydew that covers the leaves. Heavily infested plants also appear wilted.

This pest is one of the most destructive insects to the potato crop. It not only greatly reduces the yield but is also responsible for the transmission of several virus diseases of potatoes.

POTATO LEAFHOPPER

The description of this insect was given with pests of alfalfa. Its damage to potato leaves is seen as brown leaf margins and cupped leaves. This damage is referred to as "hopper burn" on potatoes.

PESTS OF SPINACH

GREEN PEACH APHID

See the discussion under "Pests of Pepper."

SPINACH LEAFMINER

This small fly maggot destroys the tissue between the upper and lower leaf surfaces. The damaged areas turn from green to white to brown. Infested leaves are unfit for food. It is not uncommon to see plantings with 25 to 50 percent of the leaves ruined by this insect. Harvesting such a crop is not profitable.

The winter is passed in the pupal stage, and the small, gray, adult flies emerge in early May and deposit their eggs in the leaves of spinach, beets, or Swiss chard. Three or more generations occur per year.

PESTS OF SWEET CORN

SEED CORN MAGGOT

This is the same insect as described in the “Pest of Beans” section.

CORN FLEA BEETLE

These tiny, black, hard-shelled, jumping beetles have increased in importance during the past several years. They are carriers of Stewart’s disease, or bacterial wilt, of corn. The bacteria overwinter in the gut of the beetles, and the beetles transmit the disease to the young corn plants in the spring. Flea beetles emerge in early to mid-May and begin to feed on corn when it is still in the spike stage. Winter temperatures play an important role in the abundance of corn flea beetles the following spring. It is now evident that mild winters permit survival of a large population of overwintering flea beetles. If the total of the average temperatures for the months of December, January, and February is 90^oF or more, winter survival is expected to be high.

If conditions appear favorable for flea beetles, it will be beneficial to select varieties that are resistant or tolerant to bacterial wilt.

CORN EARWORM

These are large (up to 1 3/4 inch), plump, pinkish-brown worms that feed on kernels at the tip of the ear. The moderately large buff-brown moths deposit their eggs on fresh silks. Infested ears are usually rejected by sweet corn buyers (mainly because of appearance). It is practically impossible to detect infested ears until the protective husks are pulled back to expose the kernels.

Corn earworm infestations are usually low in corn that is harvested early. Earworm damage is usually most severe in sweet corn that reaches the silk stage after August 15.

EUROPEAN CORN BORER

The larvae, or borers, are flesh colored and marked with brown spots. Fully grown worms are approximately 3/4 inch long. The first evidence of corn borer infestation shows up during the latter part of June. Pinholes can be found in the leaves, and the whorl and developing tassel are destroyed. The larvae will later bore into any part of the stalk and into the ears.

The greatest amount of damage to sweet corn by the corn borer is done by the first generation. Corn is normally past the highly attractive stage of development when the second generation moths are active in late July and early August. (This generation of corn borer is destructive to peppers, beans, and other vegetables.)

Corn borers pass the winter as fully grown borers inside their host plant. They pupate in May and June; the first generation moths are active during June. The moths are buff colored with a wing expanse of about one inch.

PESTS OF TOMATOES

APHIDS

From about mid-June through the growing season, these small (1/8 inch), pink and green, soft-bodied, sucking insects are often present on stems near the growing tips. This species is not often a serious problem. Natural controls usually keep aphid numbers down to a level of minor importance; chemical control measures are seldom needed.

A very small (1/16 inch), yellowish-green aphid, the peach aphid, may move into fields about mid-July. This species can build up populations rapidly and can cause serious damage to plants.

CUTWORM

Several species of these large (1 to 1 1/2 inch), gray to black, fleshy worms live in the soil and cut off plants near the ground level. Cutworms are usually most numerous in fields that were in sod or small grain the previous year.

Cutworms are the larvae of moderately large moths. The moths deposit their eggs in early fall in weedy and grassy areas. Eggs hatch in the fall, and the cutworm larvae go through the winter partially grown in protected areas in the field. They complete their growth in the spring.

FLEA BEETLE

These are small (1/16 inch), black, hard-shelled, jumping beetles that eat many small holes in the leaves of the plants. Flea beetles cause greatest damage to newly set transplants. The shock from transplanting plus the loss of additional foliage by the feeding of beetles can retard establishment of the plants. Flea beetles are of minor importance after plants are well established and growing.

COLORADO POTATO BEETLE

Although this insect is primarily a pest of potatoes, it has been a problem in a few fields of direct-seeded tomatoes. The damage by the soft, dark-red, humpbacked larvae is similar to that on potatoes. Larvae eat the leaves and defoliate the plants.

HORNWORM

A few hornworms are always present in a tomato field, but they are seldom abundant enough to warrant a spray application. Hornworms are large, plump, and green with a red or black curved "horn" protruding from the top of the rear of the worm. Fully grown worms are up to two inches long and have white diagonal marks along the sides.

They are first noticed when one or two branches are completely defoliated, and when dark, pellet-like droppings are found scattered on the ground below.

The adults are large hawk moths, often called hummingbird moths. They overwinter in the soil in the typical dark-brown, jug-handle pupal case.

WHITEFLY

Although we call this beetle insect whitefly, it is not related to the true flies, but is closely related to the scale insects. The adults are tiny (1/20 inch), white and fragile, have four wings, and readily fly up from the foliage when disturbed. The larvae are also extremely tiny, colorless, flat and immobile, and are difficult to detect on the undersides of leaves. They suck sap from the plants, and they secrete honeydew; hence their damage is similar to that of aphids. They are seldom noticed before mid- or late July.

This species does not survive the winter outdoors. Infestations come from infested plants brought into the area. Therefore, infestations can be prevented by carefully examining plants to be certain they are "clean" before going into the field.